January 8, 2017

Daniel T. Wise

ADDRESS
Department of Mathematics & Statistics, McGill University
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EDUCATION
Ph.D. Mathematics, Princeton (Nov 1996)
B.A. Mathematics, Yeshiva (1989 -1991)

ACADEMIC POSITIONS
Visiting Professor, Technion (2/2016-8/2016)
Henri Poincare Chair, IHP (8/2015-2/2016)
James McGill Professor, McGill University (2013-)
Full Professor, McGill University (2009-2013)
Visiting Professor, Hebrew University (2008-2009)
Associate Professor, McGill University (2004-2008)
Assistant Professor, McGill University (2001-2004)
Visiting Assistant Professor, Brandeis (2000-2001)
H.C. Wang Assistant Professor, Cornell (1997-2000)
NSF Postdoctoral Fellow, UC Berkeley (1996-1997)
Lecturer, Princeton University (1995-1996)

RESEARCH INTERESTS
The theory of infinite groups – with applications to Geometry and Topology. Specifically: geometric group theory, metric spaces of nonpositive curvature, residually finite groups, subgroup separability, 3-dimensional manifolds, coherence.

GRANTS, AND SCHOLARSHIPS
NSERC: Program in Pure Math, 2013-2018: $190k total
NSERC Discovery Accelerator Supplement, 2013-2016: $120k total
NSF/CBMS Regional Conference, August 2011, co-PI / keynote speaker: ~US$46k
Lady Davis Fellowship at Hebrew University 2008-2009: ~$7k
NSERC: Program in Pure Math, 2008-2013: $165k total
NSERC: Program in Pure Math, 2005-2010: $140k total
FQRNT: (co-investigator) Topology Team Grant : 2003-2007 $90k
FCAR: Nouveaux Chercheurs, 2002-2005: $45k total
NSERC: Program in Pure Math, 2001-2005, $76k total
NSF: Program in Topology, 1999-2002, US$85,982 total
NSF: Postdoctoral Fellowship, 1996-1999: US$75k total
Various Graduate Fellowships at Princeton: 1991-1996 ~US$15k yearly

COMMENDATION
2013 Oswald Veblen Prize in Geometry.
2014 ICM speaker (joint session of Geometry & Topology).
2014 Fellow of Royal Society of Canada.
2016 Jeffery-Williams Prize
2016 CRM-Fields-PIMS Prize
2016 Guggenheim Fellow

PERSONAL
Married with four children.

TEACHING

GRADUATE AND POSTDOCTORAL SUPERVISION

Brahim Addenbi (MSc in progress)
Nima Hoda (PhD in progress)
Katarzyna Jankiewicz (PhD in progress – joint with Przytycki)
Jingyin Huang (Postdoc 2015-2017 joint with Przytycki)
Daniel Woodhouse (PhD 2016) (Winner of 2016 Pelletier Fellowship) [Currently Postdoc at Technion]
Antony Della Veccia *"Sectional Curvature of One-Relator Groups"* (MSc 2016)
Joseph Helfer *"Counting cycles in graphs"* (MSc 2015) [Currently Stanford Math PhD student]
Nima Hoda *"Quadric Complexes"* (MSc 2015) [Currently McGill Math PhD student]
Dr. Mathieu Carette (Postdoc 2013-2014) [Currently studying Data Mining in Belgium]
Dr. William Cavendish (NSF Postdoc 2013-2014) [Currently McKinsey Consulting]
Hadi Bigdely *"Subgroup theorems in relatively hyperbolic groups and small cancellation theory"*(PhD 2013) [Currently lecturer at Marionopolous College]
Mark Hagen *"Geometry and Combinatorics of Cube Complexes"* (PhD 2012) (Winner of 2012 Carl Herz Prize)
[U.Mich.Postdoc] and [currently Cambridge Postdoc]
Jason Polak *"A Class of Residually Finite Groups Isomorphic to Fundamental Groups of VH Complexes"* (MSc 2011)
[PhD in number theory at McGill] and then [Postdoc in Melbourne]
James Requeima, MSc *"Relative Negative Sectional Curvature"* (MSc 2008)
[Lecturer at Dawson College]
Jitendra Bajpai, MSc *"Surface Groups are Omnipotent"* (MSc 2008)
[math PhD at U. Alberta]
David Janzen, MSc *"The Smallest Irreducible Lattice"* (MSc 2007)
[Currently lecturer at John Abbot College]
Joe Lauer, MSc "*Cubulating One-relator Groups With Torsion"* (MSc 2007)
[2012 Yale math PhD, currently Postdoctoral fellow at MIT]
Emily Richer, MSc *"Relatively Hyperbolic Graphs of Groups"* (MSc 2006)
[Currently lecturer at Dawson College]
Dr. Inna Bumagin, (Postdoc 2002-2004) [Currently Assoc. Prof. at Carleton Univ.]
Kevin Burnell, *"Compactness of Convex Hulls in Nonpositively curved 2-Complexes"*(MSc 2005)
[Currently software engineer in D.C.]
Khalifa Hazzaa, *"One-relator group theory"* (MSc 2005)
[Currently a mathematics lecturer at Kuwait University]
Bogdan Nica, "*Cubulating Spaces with Walls*" (MSc 2004)
[2009 PhD Vanderbilt, 2009- Postdoc at Victoria, 2013- Postdoc at Gottingen]
Dr. Christopher Hruska, "*Nonpositively curved Spaces with Isolated Flats*" (Cornell PhD 2002)
[Currently Assoc. Prof. at University of Wisconsin]

UNDERGRADUATE STUDENT SUPERVISION

Thomas Ng, *"Growth Functions"* Honors Thesis 2014. [Currently PhD student at Temple]
Jifeng Shen, *"Computer implementation of algorithm to detect a quasiconvex hierarchy,"* (with N. Touikan) ISM-CRM Fellowship 2010. [Currently PhD student at Yale]
Marc Desgroseilliers, *"Hausdorff Dimension of the Boundaries of Small-Cancellation Groups"* USRA funded by NSERC, May-July 2008. [Subsequently PhD student in Financial Math. in France]
Bogdan Nica, *"On aperiodic tilings of the plane"* USRA funded by NSERC, May–August 2002. Jordi Guttierez-Hermoso, *"Computer recognition of curvature properties of 2-complexes"* (with I. Bumagin) ISM-CRM Fellowship, May–August 2003.

GRADUATE COURSES

Geometry & Topology I. math-576a (Fall 2016, 2013-2009, 2007, 2005, 2004, 2002, 2001)
Cube Complexes (Winter 2014)
3-manifolds, Right-angled Artin Groups & Cubical Geometry (Winter 2012)
Nonpositively Curved Cube Complexes (Winter 2010)
Geometry & Topology II, math -577b (Winter 2008)
2-complexes in Group Theory (Winter 2007)
Relatively hyperbolic groups. (Winter 2006)
Introduction to Geometric Group Theory (Winter 2004, Winter 2005, Fall 2006)
Combinatorial Group Theory (Fall 2004)
Algebraic Topology (Fall 2003)
Cube complexes and median algebras, math-691b (Winter 2003).
Small-cancellation theory. math-691b(Winter 2002).

prior to my arrival at McGill

Seminar in Topology: Low Dimensional Topology, Cornell (Spring 1999)
Topics in Topology: Geometric Group Theory, Cornell (Fall 1998)

UNDERGRADUATE COURSES

Discrete Mathematics for Engineers (Winter2011, Winter2012, Winter 2013, Winter 2014)
Reading Course on Hausdorff Dimension and Boundaries of Hyperbolic Groups (Winter2008)
Linear Algebra with Applications for Engineers. math270a,(Fall 2004, Winter 2005, Winter2006)
Linear Algebra. (Coordinator) math-223a, (Fall 2003, Fall 2002, Fall 2001)
Reading Course on Automata Theory (Fall 2003)
Differential Geometry of Curves and Surfaces, math-380b, (Winter 2003, Winter 2002)

prior to my arrival at McGill

Multivariable Calculus, Brandeis (Spring 2001)
Introduction to Abstract Algebra II, Brandeis (Spring 2001)
Multivariable Calculus, Brandeis (Fall 2000)
Introduction to Abstract Algebra I, Brandeis (Fall 2000)
Calculus for Engineers II, 3 sections!, Cornell (Fall 1999)
Linear Algebra and Calculus, 2 sections, Cornell (Spring 1998)
Second Semester Calculus, 2 sections, Princeton (Spring 1996)
Second Semester Calculus, 2 sections, Princeton, (Fall 1995)
Linear Algebra, 2 sections, Princeton (Spring 1994)
Linear Algebra, Princeton (Fall 1993)

ACADEMIC SERVICE

CONFERENCE ORGANIZATION

Co-organizer of AMS session: “Low-dimensional topology and Geometric Group Theory” March 2014.
Co-organizer of CMS panel on: “Geometrical Group Theory”. Montreal, December 2012.
Organizer of 2 weeks of mini-courses and workshop on “Geometric Group Theory”, CRM, July 2006.
Co-organizer of workshop “Geometric and Asymptotic methods in group theory”, Banff, June 2005.
Co-organizer of Symposium on “Infinite group theory”, Winter Meeting of Canadian Mathematical Society, Montreal, December 2004.
Co-organizer of AMS session:“Combinatorial and geometric group theory,” Montreal, May 2002.
Co-organizer of Workshop and Mini-courses on “Groups and low dimensional topology”, CRM, Montreal, June-July 2001.
Co-organizer of thematic Program on “Groups and Geometry”, CRM, Montreal 2001-2002.
Co-organizer of Topology Festival, Cornell, May 1999 & May 2000.

SEMINAR ORGANIZATION

Organizer of Montreal Geom. & Comb. Group Theory Seminar, McGill 2001-2007. 2013-
Organizer of Topology Seminar, Cornell, 1998-1999.
Organizer of Geometric Group Theory Seminar, Berkeley, 1996-1997.

REFEREE FOR ACADEMIC JOURNALS

Invent. Math., GGD, JPAA. Crelle's Journal, Pub. Math de l'IHES, GAFA, Proc. Amer. Math. Soc., Math Z., Journal of Algebra, Israel Jour. of Math., London Math. Soc., IJAC, Journal of Group Theory, Jour. Austr. Math. Soc., Comm. Math. Helv., TAMS, Can. Math. Bull., Math. Ann., PJM. (with multiplicity…)

REFEREE FOR GRANTING AGENCIES

NSERC, NSF, ERC, ISF

EDITORIAL WORK

Alg. & Geom. Top. 2013-current, Can.Jour.Math/Can Math.Bull 2014-current, Ann.Math.QC 2015-current.

SERVICE TO MATHEMATICAL COMMUNITY

2015-current: BIRS scientific advisory board
2012-2016: CMS research committee
2012-2016: Chair of CMS doctoral prize committee
2013-2015: AMS Centennial prize committee
2013-2015: CRM local scientific committee

DEPARTMENTAL COMMITTEE WORK

2016-current, 2013-2015:2009-2011, 2003-2008 Chair's Advisory Committee
2016-2017: Departmental Cyclical Review of Graduate Program
2016-2017: Teaching Prize Committee
2014: Deans Advisory Committee to choose a chair
2012-2013: Chair of Algebra Search Committee (Piotr Przytycki and Marcin Sabok were hired)
2012-2013: Undergraduate Affairs Committee
2005-2008, 2009-2010, 2011-2012: Director of Graduate Admissions
2010-2011: Chair of Infinite Group Theory Search Committee (Mikael Pichot was hired)
2009 -2011, 2003-2008 Graduate Affairs Committee
2003-2005: Recruitment Subcommittee
2003-2005: Vice Chair of Admissions
2003 Fall: Coordinator of Linear Algebra 223a (multiple section course)
2003: Chair of Leo Yaffe and Principal's Prize Awards Committee
2002-current: Preparation and grading of Beta exam - for formal entry to PhD dissertation stage
2002: Faculty of Science Scholarship Committee
2002-2005: Undergraduate Advisor – (Specializing in Arts Students)
*External July 2002: PhD defense committee for Chris Hruska, Cornell University
2002 Fall: Coordinator of Linear Algebra 223a (multiple section course)
2002: Chair of Leo Yaffe and Principal's Prize Awards Committee
2002: Undergraduate Affairs Committee
2001 Fall: Coordinator of Linear Algebra 223a (multiple section course)
2001-current: Preparation and grading of Beta exam - for entry into PhD dissertation stage.

PUBLICATIONS

1. "aTmenability of some graphs of groups with cyclic edge groups" (with M.Carette and D.Woodhouse) *Math. Proc. Camb. Phil. Soc.* 14pp. To appear.
2. "A Cubical Flat Torus Theorem and the Bounded Packing Property" (with D.Woodhouse) 14pp. *Israel Jour. Math.*. To.appear.
3. "The Structure of Groups with a Quasiconvex Hierarchy" ~250pp. *Ann. Math. Studies.* To appear.
4. "A Note on Maxima in Random Walks" *Elec. Jour .Comb.* (with J.Helfer) (2016) 23(1). 1–10.
5. "Incoherent Coxeter Groups" (with K.Jankiewicz) *Proc. Amer. Math. Soc.* (2016) 144(5), 1857–1866.
6. "Cubulating Hyperbolic Free-by-Cyclic Groups: the Irreducible Case" (with M.Hagen) 39pp. *Duke.* 165 (2016)9. 1753–1813.
7. "Counting cycles in labeled graphs: The nonpositive immersion property for one-relator groups" (with J.Helfer) *Int.Math.Res.Not.* 2016(9) 2813-2827.
8. "Cubulating Hyperbolic Free-by-Cyclic Groups: the General Case" (with M.Hagen) *GAFA.* (2015) 25(1), 134–179.
9. "Cores for Quasiconvex Actions" (with M.Sageev) (2015) 143(7) *Proc. Amer. Math. Soc.* 2731–2741.
10. "Cubulating Malnormal Amalgams" (with T.Hsu) 39pp. *Invent. Math.* (2015) 199(2), 293–331.
11. "Cubular Tubular Groups" *Trans Amer. Math. Soc.* (2014) 366(10), 5503–5521.
12. "Graph Manifolds with boundary are virtually special" (with P.Przytycki) *J. Topology*. (2014) 7(2) 419–435.
13. "Separability of embedded surfaces in 3-manifolds" (with P.Przytycki), *Compositio Math*. (2104) 150(9), 1623–1630.
14. "Finiteness Properties of Cubulated Groups" (with C.Hruska), *Compositio Math.* (2014) 150(3), 453–506.
15. "Cubulating One-relator Groups with Torsion" (with J.Lauer). *Math. Proc. Camb. Phil. Soc.* (2013), no. 3, 411–429.
16. "Coherence and Negative Sectional Curvature in Complexes of Groups" (with E. Martinez-Pedroza), *Mich. Math. Jour.* (2013) 507–536.
17. "Polygonal VH complexes" (with J.K.C.Polák) 7pp. *Publicacions Matemàtiques*. (2013) 421–428.
18. "Quasiconvexity and Relatively Hyperbolic Groups that Split" (with H.Bigdely) *Mich. Math. Jour.* (2013) 387–406.
19. "Cubulating Rhombus Groups." (with D.Janzen) *Groups Geom. Dyn.* 7 (2013), no. 2, 419–442.
20. "The Last Incoherent Artin Group" *Proc. Amer. Math. Soc.* (2013) 141(1): 139–149.
21. "C(6) groups do not contain $F_2 \times F_2$" (with H.Bigdely) *JPAA.* (2013) 217(1): 22–30.
22. "A Combination Theorem for Special Cube Complexes (with F.Haglund) *Annals of Math.* 176 (2012) 176(3): 1427–1482.
23. "Recubulating Free Groups" *Israel Journal of Math.* (2012) 191: 337–345.
24. "A Boundary Criterion for Cubulation" (with N.Bergeron) *Amer. Jour. of Math.* (2012) 134 (3): 843–859.
25. "Morse Theory, Random Subgraphs, and Incoherent Groups" *Bull. Lond. Math. Soc.* (2011) 43(5): 840–848.
26. "Periodic flats in cube complexes" (with M.Sageev) *Algebraic & Geometric Topology.* 11 (2011) 1793–1820.
27. "Hyperbolic Sections in Arithmetic Hyperbolic Manifolds" (with N.Bergeron and F.Haglund) *J. Lond. Math. Soc.* (2011) 83: 431–448.
28. "Cubulating random groups at density < 1/6" (with Y.Ollivier) *Trans. Amer. Math. Soc.* **363** (2011), 4701–4733.
29. "Local Quasiconvexity of Groups acting on Small Cancellation Complexes" (with E. Martinez-Pedroza) *JPAA.* 215 (2011) 2396–2405
30. "Relative Quasiconvexity Using Fine Hyperbolic Graphs" (with E. Martinez-Pedroza) *Algebraic & Geometric Topology* 11. (2011) 477–501.
31. "Windmills and Extreme 2-cells," (with J.McCammond), *Illinois J. Math.* 54, no.1 (2010) 69–87.
32. "Cubulating graphs of free groups with cyclic edge groups" (with T.Hsu) *Amer. Jour. of Math.* 132, no.5 (2010) 1153–1188.
33. "Special groups with an elementary hierarchy are virtually free-by-Z" (with M.Hagen) *Groups, Geometry and Dynamics*. 4 (2010), no. 3. 597–603.
34. "Coxeter Groups are virtually special" (with F.Haglund), 20pp. *Adv. Math.* 224 (2010) 1890–1903.
35. "Research announcement: The structure of groups with a quasiconvex hierarchy" *Electronic Research Announcements in Mathematical Science.* 16 (2009) 44–55.
36. "A smallest irreducible tree x tree lattice" (with D.Janzen) *Algebraic & Geometric Topology*. 9 (2009) 2191–2201.
37. "The bounded packing property" (with C.Hruska) *Geometry & Topology.* 13 (2009) 1945–1988.
38. "Special Cube Complexes" (with F.Haglund) *Geom. Funct. Anal*. (2008) 17 no.5, 1551–1620.
39. "Locally quasiconvex small-cancellation groups," (with J.McCammond). *Trans. Amer. Math. Soc.* 360 (2008) no.1, 237–271.
40. "Nonpositive sectional curvature for (p,q,r)-complexes" *Proc. Amer. Math. Soc*. 136 (2008) no.1, 41–48.

41. "Complete Square Complexes," *Comment. Math. Helv.* 82 (2007) no.4, 683–724.
42. "Khazdan groups with infinite outer automorphism group" (with Y.Ollivier) *Trans. Amer. Math. Soc* **359** (2007), no 5, 1959–1976
43. "Subgroup separability of the figure 8 knot group," *Topology* **45** (2006) 421–463.
44. "Every group is an outer automorphism group," (with I.Bumagin) *J. Pure Appl. Algebra* **200** (2005), no. 1-2, 137–147.
45. "The Tits Alternative for CAT(0) Cube Complexes," (with M.Sageev) *Bull. Lond. Math. Soc.* **37** (2005), no. 5, 706–710.
46. "Coherence, local quasiconvexity, and the perimeter of 2-complexes,"(with J.McCammond). *Geom. Funct. Anal*. **15** (2005)**,** 859–927.
47. "The coherence of one-relator groups with torsion, and the Hanna Neumann" *Bull. Lond. Math. Soc.* 37 (2005), no. 5, 697–705.
48. "Approximating flats by periodic flats in CAT(0) square complexes" *Canadian. Jour. Math.* 57(2): 416-448, 2005.
49. "Groups with infinitely many fixed subgroups," 11pp (with T.Hsu) *Israel J. Math* 144: 93–107, 2004.
50. "Cubulating small-cancellation groups," *Geom. Funct. Anal.* 14: 150–214, 2004.
51. "Sectional curvature, compact cores, and local-quasiconvexity," *Geom. Funct. Anal*, 14: 433–468, 2004.
52. "The residual finiteness of ascending HNN extensions of polycyclic groups," (with T.Hsu), *J. Pure Appl. Algebra* **182**(1): 65–78, 2003.
53. "Nonpositive immersions, sectional curvature, and subgroup properties," *Electron. Res. Announc. Amer. Math. Soc.* **9** (2003), 1–9.
54. "A flat plane that is not the limit of periodic flat planes," *Alg. Geom. Top.* 3: 147–154, 2003.
55. "A residually finite version of Rips's construction," *Bull. Lond. Math. Soc.* 35(1): 23–29*,* 2003.
56. "The residual finiteness of negatively curved polygons of finite groups." *Invent. Math.* 149(3): 579–617, 2002.
57. "The residual finiteness of quasi-positive one-relator groups," *Jour. Lond. Math. Soc.* 66:334–350, 2002.
58. "The rank of a direct power of a small-cancellation group," *Geom. Dedicata.* 94, 215–223, 2002.
59. "A covering space with no compact core." *Geom. Dedicata*. 92*,* 59–62*,* 2002.
60. "Separating quasiconvex subgroups of right-angled Artin groups," (with T. Hsu). *Math Z.* 240(3): 521–548, 2002.
61. "Fans and ladders in small-cancellation theory" (with J. McCammond). *Proc. Lond. Math. Soc.* 84(3):499–644, 2002.
62. "Ascending HNN extensions of residually finite groups can be non-Hopfian and can have very few finite quotients," (with M.Sapir). *JPAA*, 166(1-2): 191–202, 2002.
63. "Residual finiteness of positive one-relator groups." *Comment. Math. Helv.* 76(2): 314–338, 2001.
64. "Towers, ladders, and the B.B. Newman Spelling Theorem" (with C.Hruska). *J. Aust. Math. Soc.* 71(1): 53–69, 2001.
65. "On the failure of the co-Hopf property for word-hyperbolic groups," (with I.Kapovich). *Israel J. of Math.* 122: 125–147, 2001.
66. "Malnormality is undecidable for subgroups of word-hyperbolic groups," (with M.Bridson). *Israel J. of Math.* 124: 313–316, 2001.
67. "Ascending HNN extensions of finitely generated free groups are Hopfian" (with R.Geoghegan, M.Mihalik, and M.Sapir) -*Bull. Lond. Math. Soc.* 33(3): 292–298, 2001.
68. "Subgroup separability, knot groups and graph manifolds," (with G. Niblo). *Proc. Amer. Math. Soc.* 129, no.3, 685–693, 2001.
69. "Subgroup separability of graphs of free groups with cyclic edge groups." *Q. J. Math.* 51, no.1, 107–129, 2000.
70. "The equivalence of some residual properties of word-hyperbolic groups," (with I.Kapovich). *J. Algebra* 223, no. 2, 562–583, 2000.
71. "A continually descending endomorphism of a finitely generated, residually finite group*." Bull. Lond. Math. Soc.* 31, no. 1, 45–49, 1999.
72. "A non-residually finite square of finite groups," (with T. Hsu). *Groups St. Andrews 1997 in Bath, I,* 368–378*, London Math. Soc. Lecture Note Ser., 260, Cambridge Univ. Press, Cambridge, 1999.*
73. "On linear and residual properties of graph products," (with T. Hsu). *Michigan Math. J.*, 46, no. 2, 251–259, 1999.
74. "VH-complexes, towers, and subgroups of $F_2 \times F_2$," (with M. Bridson). *Math. Proc. Cambridge Philos. Soc.* 126, no. 3, 481–497, 1999.
75. "Some free-by-cyclic groups," (with I. Leary and G. Niblo). *Groups St. Andrews 1997 in Bath, II,* 512–516, *Lond.Math.Soc.Lect.Note Ser*., 261, Cambridge Univ. Press, Cambridge, 1999.
76. "Embedding theorems for non-positively curved polygons of finite group," (with T. Hsu). *J. Pure Appl. Algebra*, 123 (1-3): 201–221, 1998.
77. "The engulfing property for 3-manifolds," (with G. Niblo). In *Geometry and Topology, Monograph (1):The Epstein Birthday Schrift*, pp. 413-418, 1998.

78. "Incoherent negatively curved groups." *Proc. Amer. Math. Soc.*, 126 (4): 957–964, 1998.
79. "A non-Hopfian automatic group," *J. Algebra*, 180 (3): 845–847, 1996.

Other publications:

80. "The cubical route to understanding groups" Proceedings of the ICM, Seoul, 2014, 1075—1099.
81. *"From Riches to Raags: 3-manifolds, Right-angled Artin Groups, and Cubical Geometry"* CBMS Regional Conference Series in Mathematics (117), 141pp. 2012
82. *"Non-positively curved squared complexes, aperiodic tilings, and non-residually finite groups."* Ph.D. thesis, Princeton University, 71pp. 1996.

The following papers are under consideration by journals:

83. "Criteria for the vanishing of the 2nd L^2 Betti number" 21pp. Submitted to *Jour. Lond. Math. Soc.*
84. "Mixed 3-manifolds are virtually special" (with P.Przytycki), 24pp. Submitted to *Jour. AMS.*
85. "Cubulating Polynomial Growth Free-by-Cyclic Groups" (with M.Hagen) 28pp. Submitted to *CMH*.
86. "Virtually Fibering Coxeter Groups" (with K.Jankiewicz and S.Norine) 20pp. Submitted to *Journal of the Institute of Mathematics of Jussieu.*
87. "Some Virtual Limit Groups" 6pp. submitted to *Groups Geom. & Dynamics*.
88. "Growth of a Quasiconvex Subgroup" (with F.Dahmani and D.Futer), 25pp. submitted to *Pacific Jour. Math.*

In preparation:

89. "Sixtolic groups" 30pp. Preprint 2003.
90. "Virtual Cleanliness" 19pp Preprint 2006.
91. "Coherence, local-indicability and nonpositive immersions," 9pp.
92. "Survey on Coherent Groups", 36pp, 2004.
93. "Positive one-relator groups are coherent," 12pp.
94. "Local quasiconvexity is preserved by high powered quotients for cubulated groups" (with E.Martinez-Pedroza), in preparation.
95. "Generic Negative Curvature" (with D.Futer), 11pp. 2013.
96. "VHification"(with F.Haglund) 21pp. 2013.
97. "What is a cube complex?" Notices of the AMS. 2pp. to appear.
98. "Cubulating Random Quotients of Cubulated Groups" (with D.Futer), 14pp. 2015.
99. "Cubulating Small-Cancellation Free Products (with K.Jankiewicz) 9pp.2016.
100. "Generalized Height and Virtual Specialness (with J. Huang) 16pp.2017.
101. "Residual Finite Tubular Groups" (with D.Woodhouse) in preparation.

LECTURES

MINI-COURSES AND INVITED LECTURES

Chelluri Lecture, Cornell April 2017.
Alaoglu Lecture, Caltech, Feb 2017.
Can. Math. Soc. Jeffery-Williams Prize Lecture, Niagra Falls, Dec 2016.
CRM-PIMS-Fields lecture, UBC Oct 2016, Fields Institute, Oct 2016, CRM TBA,
"Nonpositive immersions and counting cycles", Conference on Topology and Geometry, Bonn, August 2015.
"Counting cycles in labelled digraphs: a rank-1 variant of the Hanna Neumann Conjecture", Graduate Topology,Algebra,Geometry Conference, Temple Univ. May 2015.
"Coherent Groups" GATSBY lecture, Yale May 2015
"CAT(0) Cube Complexes/Cubulating Groups/Special Cube Complexes" Zassenhaus Lectures (3 lectures) Ohio State, Spring 2015
Graduate Topology Conference, UIUC "Counting Cycles in graphs"
Graduate Conference, Temple "Counting Cycles in Graphs"
The Cubical Route to Understanding Groups" Colloquium CRM, Montreal Nov 2014
"CAT(0) Cube Complexes/Cubulating 3-manifolds/Virtual Specialness" Keynote speaker (3 lectures) at Topologie meeting, Oberwolfach, Sept 14-20, 2014.
"The Cubical Route to Understanding Groups" Joint session of Geometry and Topology at ICM, Seoul, Aug 2014
"Overview/Special Cube Complexes/Cubical Small-Cancellation Theory/Special Quotient Theorem" (4 lectures), Copenhagen July 7-11 2014.
"Cube Complexes" AMS invited address, Baltimore, March 2014.
"Cube Complexes" CMS plenary talk, December 2013.
"Overview/Special Cube Complexes/Cubical Small-Cancellation Theory/Cubulating Malnormal Amalgams"(4 lecture series) at: 3-Manifold Topology & Cube Complexes, UIC, May 2013.
"From Riches to Raags: Cubes, Groups, and 3-Manifolds" Peter Hilton Memorial Lecture, Binghamton, April 2013.

"From Riches to Raags: 3-Manifolds, Cubes, and Right-Angled Artin Groups". Plenary Lecture. Spring Topology and Dynamics Conference, Connecticut, March 2013.
"Cubical Geometry" (8 lecture series) ICM workshop on: cubical complexes & Applications. Edinburgh, July 16-20, 2012.
"Cubulating Groups / Cubical small-cancellation theory / The malnormal special quotient theorem" (3 lecture series) Recent Progress on Hyperbolic 3-manifolds, Ann Arbor, May 2012.
"3-manifolds, Artin Groups and Cubical Geometry" NSF/CBMS Regional Lecture Series, CUNY, Keynote speaker (10 lectures), August 1-5, 2011.
"The structure of groups with a quasiconvex hierarchy / Special cube complexes / Cubical small-cancellation theory" (3 lectures) Lille, June, 2011.
"The structure of groups with a quasiconvex hierarchy / Special cube complexes / The malnormal special quotient theorem / Cubical small-cancellation theory" (4 lectures) Columbus, May 2011.
"The structure of groups with a quasiconvex hierarchy" (14 hours of Lectures during 3 days), Virtual properties of 3-manifolds. UQAM, April 2010.
"The structure of groups with a quasiconvex hierarchy" Topology Festival. Cornell, May 2010.
"A survey on CAT(0) cube complexes" Topology Festival, Cornell, May 2010.
"The structure of groups with a quasiconvex hierarchy" (3 lectures) Wasatch Topology Conference, December 2009.
"Special Cube Complexes" (semi-plenary talk) Spring Topology and Dynamics, Milwaukee, March 2008.
"Cube Complexes in Geometric Group Theory" (2 one hour lectures) Deux journées de théorie géométrique des groupes, Orsay, Dec 2007.
"Nonpositively curved cube complexes in Geometric Group theory" (3 lectures)
Fields Institute Workshop in Geometric Group Theory, Carleton (Aug 2006)
"Special Cube Complexes" Olshanskii Festival, Nashville (May 2006)
"Residual Finiteness in Geometric Group Theory" Workshop on profinite groups and applications, August 2005, Ottawa
"Special Cube Complexes" Wasatch Topology Conference, (June 2005)
"Cubulating Groups" (plenary talk) Spring Topology and Dynamics, Georgia, (March 2005)
"Survey on Coherent Groups" Conference on Geometric Group Theory, Mathematical Research
and Conference Center, Bedlewo, Poland (April 2004)
"On the vanishing of the 2^{nd} L^2 betti number" Conference on Coarse Geometry, Kyoto, Japan (January 2004)
"Cubulating Small-Cancellation Groups" Conference on Coarse Geometry, Kyoto, Japan (January 2004)
"Nonpositive immersions, local indicability and coherent groups"
Geometric Groups on the Gulf Cost, (November 2002)
"Virtual Cleanliness," Albany Group Theory Conference (October 2001)
"Sectional Curvature, Local Indicability, and Coherence," Technion (June 2000)
"Negative Curvature and Residual Finiteness" Stallingsfest, MSRI (May 2000)
"Subgroup Separability of the Figure 8 Knot Group," Cornell Topology Festival (May 1999)
"Subgroup Separability of the Figure 8 Knot Group," Spring Topology Conf. SLC, (March 1999)
"Subgroup Separability of the Figure 8 Knot Group," Melbourne, Australia (July 1999)
"Coherent groups and the Perimeter of 2-complexes," Melbourne, Australia (July 1999)
"Subgroup Separability of the Figure 8 knot group," Wasatch Topology Festival (June 1998)
"Coherent Groups and the Perimeter of 2-Complexes," Wasatch Topology Festival (June 1998)
"Coherent Groups and the Perimeter of 2-Complexes," Mt. Holyoke, AMS Summer Conf. (July 1998)
"Subgroup Separability of the Figure 8 Knot Group," Southampton, England (July 1997)

CONTRIBUTED CONFERENCE TALKS

TBA, Mathematical Congress of the Americas, Semi-Plenary, July 2017.
"The Cubical Route To Understanding Groups", Georgia Tech Topology Conference Dec 2016.
"Coherent Groups" & "Counting cycles in labelled digraphs: a rank-1 variant of the Hanna Neumann Conjecture" Journées de géométrie des groups, Lille, Nov 2015.
"Counting cycles in labelled digraphs", Neuchatel, Seminar, Oxford, Oct 2015.
"Counting cycles in labelled digraphs: a rank-1 variant of the Hanna Neumann Conjecture", Columbia Univ. Top. Sem. April 2015.
"Cubulating Hyperbolic Free-by-Cyclic Groups" ICM satellite Geom. Group Theory, Daejeon, Korea. Aug 2014
"Mixed 3-Manifolds are Virtually Special" Conference in Memory of Thurston" Cornell, June 2014.
"Cubular Tubular Groups" CMS meeting, Ottawa, Dec 2013.
"Mixed 3-Manifolds are Virtually Special", Workshop on the Topology of 3-Manifolds, CRM, May 2013.
"Cubular Tubular Groups", AMS meeting, San Diego, Jan 2013.
"3-Manifold Groups", Algebra Days with focus on geometric group theory, Carleton, Oct 2012.
"A Problem about Curves in Surfaces", Hyperbolic geometry and Teichmuller theory, Hunter College Sept 2012.
"Cubulating Groups" Panaroma of Topology in honor of Browder, Princeton, May 2012
"Cubulating Malnormal Amalgams" Technion, June 2011.
"Baumslag's conjecture on the residual finiteness of one-relator groups with torsion" Topics in Geometric and Algorithmic Group and Semigroup Theory. CRM, (August 2010)
"Baumslag's conjecture on the residual finiteness of one-relator groups with torsion" 15^{th} Amitsur Memorial Symposium. Hebrew University. (July 2009)
"Cubulating Groups", Workshop on Geometric Group Theory" MSRI, Berkeley (August 2007).
"Coherent Groups," Workshop on problems in Geometric Group Theory" American Institute of Mathematics, Palo Alto (April 2007)
"Nonpositive immersions, local indicability and coherent groups", AMS Meeting, NYC (April 2003)
"Cubulating Small-cancellation groups," Workshop on `Elementary theory of free groups and related topics,' McGill (Aug 2002)
"The Residual Finiteness of One-relator Groups with Torsion," AMS Meeting, NYC (Nov 2000)
"Most positive one-relator groups are residually finite," Albany Group Theory Conference (Oct 1998)
"Coherent Groups and the Perimeter of 2-Complexes," Non-positive curvature in Group Theory, Geometry and Topology, Vanderbilt (June 1998)
"Coherent Groups and the Perimeter of 2-Complexes," Geometric Group Theory on the Gulf, Mobile, Alabama (March 1998)
"Residual Finiteness of Negatively-Curved Polygons of Finite Groups," Groups-St. Andrews, Bath, England (July 1997)

"Subgroup Separability of the Figure 8 Knot Group," AMS Meeting, College Park, MD (April 1997)
"Finitely Presented Covering Space with No Compact Core," Albany Group Theory Conf. (Oct 1996)
"A Non Hopfian Automatic Group," Albany Group Theory Conference (Oct 1995)
"Subgroup Separability of Graphs of Free Groups with Cyclic Edge Groups," AMS Meeting, Baton Rouge, LA (April 1995)

SEMINAR AND COLLOQUIUM TALKS (OUTSIDE SEMINAR AT MCGILL)

"Nonpositive Immersions and Counting Cycles", Topology Seminar, UBC, Oct 2016.
"The Cubical Route to Understanding Groups", MIT Colloquium, Sept 2016.
"The Cubical Route to Understanding Groups", Boston Area Colloquium, Sept 2016
"Virtual Limit Groups", Barcelona July 2016
"A graph coloring problem and its algebraic and topological consequences", Barcelona, July 2016
"Some Virtual Limit Groups", Hebrew University, June 2016
"Counting cycles in labelled digraphs", Bar Ilan University, May 2016.
"VH-ification", Technion, Haifa, May 2016.
"The Cubical Route to Understanding Groups", Hebrew University Colloquium, May 2016
"The Cubical Route to Understanding Groups", Technion Colloquium, May 2016
"The Cubical Route to Understanding Groups", Tel Aviv Colloquium, May 2016
"A cubical flat torus theorem" Technion, Haifa, Dec 2015.
"A cubical flat torus theorem" Geom, Rennes, Dec 2015.
"Nonpositive immersion and counting cycles" Geom.& Dyn, Orsay, Dec 2015.
"Counting cycles in labelled digraphs", Colloquium, Warwick, Oct 2015.
"A cubical flat torus theorem", G&T Seminar, Oxford, Oct 2015.
"Coherent Groups", Colloquium, Grenoble, Oct 2015.
"Counting cycles in labelled digraphs: a rank-1 variant of the Hanna Neumann Conjecture", Rips Conference, Hebrew University, Dec 2014.
"Counting cycles in labelled digraphs: a rank-1 variant of the Hanna Neumann Conjecture, Discrete Math Seminar, McGill, Dec 2014.
"From Riches to Raags: Cubes, Groups, and 3-Manifolds" PATCH seminar, Temple, April 2013.
"Cubular Tubular Groups", Binghamton, April 2013.
"Cube Complexes" Colloquium, Columbia, Jan 2012.
"Relative Quasiconvexity" G&T seminar, Columbia, Jan 2012.
"Quasiconvexity in Relatively Hyperbolic Groups that Split" Tufts, Dec 2011.
"Cube Complexes in Geometric Group Theory" Colloquium, Brandeis, Dec 2011.
"Cube Complexes" Colloquium, Vanderbilt, Nov 2011.
"Cube Complexes in Geometric Group Theory" Colloquium, Brown, Sept 2011.
"Morse Theory, Random Graphs, and Incoherent Groups" Binghamton, April 2011.
"The Structure of Groups with a Quasiconvex Hierarchy" G&T Seminar, UMaryland April 2011.
"Cube Complexes in Geometric Group Theory" Colloquium, GWU April 2011.
"The Structure of Groups with a Quasiconvex Hierarchy" Topology Seminar,Yale April 2011.
"Morse Theory, Random Graphs, and Incoherent Groups" Geometry Seminar, Columbia, January 2011.
"The Structure of Groups with a Quasiconvex Hierarchy" Magnus Group Theory Seminar, CUNY (April 2010).
"Cube Complexes in Geometric Group Theory" Colloquium, Princeton March 2010.
"The Structure of Groups with a Quasiconvex Hierarchy" Topology Seminar, Princeton, March 2010.
"Groups with a quasiconvex hierarchy" Topology Seminar, UQAM, Sept 2009.
"Groups with a quasiconvex hierarchy" Geometry Seminar, Columbia, August 2009.
"Morse Theory, Random Graphs, and Incoherent Groups", Group Theory and Dynamics Seminar, Hebrew U. May 2009.
"The Structure of Groups with a Quasiconvex Hierarchy" Technion. Colloquium. Jan 2009
"The W-cycle Conjecture" Bar-Ilan Algebra Seminar, Jan 2009
"The W-cycle Conjecture" Combinatorics Seminar, Hebrew U. Jan 2009
"Introduction to Word-hyperbolic Groups" Tel-Aviv Geometry Seminar. Dec 2008
"The Structure of Groups with a Quasiconvex Hierarchy" Hebrew U. Colloquium, Nov 2008.
"Morse Theory, Random Graphs, and Incoherent Groups" Ottawa, March 2008
"Survey of Nonpositively Curved Cube Complexes" Buffalo, October 2007
"Survey of Nonpositively Curved Cube Complexes" Binghamton, July 2007
"Survey of Nonpositively Curved Cube Complexes" Albany, July 2007
"Special Cube Complexes" CCNY, November 2006.
"Special Cube Complexes" Topology Seminar, Columbia, September 2006
"Subgroup separability of prime alternating link groups", Montreal 2006
"Nonpositive sectional curvature", Orsay, April 2005
"Nonpositive immersions, the strengthened Hanna Neumann conjecture, and the coherence of one-relator groups with torsion", Geom. Top. Sem., Columbia, (Sept 2003)
"Cubulating Small Cancellation Groups" Technion, (June 2003)
"Nonpositive immersion, local indicability and coherent groups" Hebrew U, (June 2003)
"Nonpositive immersions, local indicability and coherent groups", Joint meeting of Alg. and Top. Seminars, Binghamton (April 2003)
"Cubulating Small Cancellation Groups," New York Group Theory Seminar, CUNY (April 2003)
"Subgroup Separability," Seminaire du CIRGET, UQAM (Feb 2002)
"The Residual Finiteness of One-relator Groups With Torsion,"NYGroupSeminar,CUNY(Feb01)
"Hopfian and Non-Hopfian Groups," Geometric Analysis Seminar, Technion (Jan 2001)
"Coherent Groups and the Perimeter of 2-Complexes," Colloquium, Technion (Jan 2001)
"The Residual Finiteness of One-relator Groups with Torsion," Alg. Sem., Hebrew U(Dec2000)

"Coherent Groups and the Perimeter of 2-Complexes," Colloquium, U of Conn. (April 2000)
"Subgroup Separability of the Figure 8 Knot Group," Topology Seminar, Columbia U (Feb 2000)
"The residual finiteness of positive one-relator groups," Max Dehn Seminar – U of Utah (March 1999)
"Negative Curvature and Residual Finiteness," Colloquium, U of Utah (March 1999)
"Negative Curvature and Residual Finiteness," Colloquium, Vanderbilt (Dec 1998)
"Subgroup separability of the Figure 8 knot group," Topology Seminar, Ohio State U (Nov 1998)
"Three Manifold Groups that are not subgroup separable," U of Michigan (April 1998)
"Coherent Groups and the Perimeter of 2-Complexes," Magnus Group Theory Seminar, CUNY (March 1998)
"Coherent Groups and the Perimeter of 2-Complexes," Topology Sem., Ohio S.U. (March 1998)
"Three Manifold Groups that are not Subgroup Separable," Topology Sem.,Cornell (March1998)
"Subgroup Separability of the Figure 8 Knot Group," SUNY Binghamton (Jan 1998)
"Coherent Groups and the Perimeter of 2-Complexes,"Colloquium,SUNY Binghamton(Jan 1998)
"Subgroup Separability of the Figure 8 Knot Group," Technion, Israel (Jan 1998)
"Subgroup Separability of the Figure 8 Knot Group," Topology Seminar, Cornell (Jan 1998)
"Non Residually Finite C(4)-T(4) Groups," Topology Seminar, Cornell (Nov 1997)
"Towers, VH Complexes and Subgroups of F_2 x F_2, Topology Seminar," Cornell (Sept 1997)
"Subgroup Separability of the Figure 8 Knot Group," MSRI (May 1997)
"Non Residually Finite Groups Acting on the Product of Two Trees," Geometric Group Theory Seminar, Berkeley (Feb 1997)
"Incoherent Negatively Curved Groups," Geom. Group Theory Sem., Berkeley (Nov 1996)
"Towers, VH Complexes and Subgroups of F_2 x F_2,"Geom.Grp.Theory Sem.Berkeley (Sept 1996)
"Non Positively Curved Squared Complexes, Aperiodic Tilings and Non-Residually Finite Groups," Princeton (Dissertation Defense, June 1996)
"Subgroup Separability of Graphs of Free Groups with Cyclic Edge Groups," Princeton-Rutgers Group Theory Seminar, Princeton (April 1996)
"A Non Hopfian Automatic Group," NY Group Theory Seminar, CUNY (March 1996)
"A Non Positively Curved Squared Complex with No Finite Covers," U of Mich. (Sept 1995)
"A Non Hopfian Automatic Group," Hebrew U of Jerusalem, Israel (April 1995)
"A Non Positively Curved Squared Complex with No Finite Covers," AMS Meeting, Greensborough, SC (April 1995)
"A Non Positively Curved Squared Complex with No Finite Covers,"Southampton,UK(March95)
"Introduction to Small Cancellation Theory", Peter Neumann's Kinderseminar, Oxford, England (Jan95) (My First Talk!)